

In the claims:

Please amend the claims as follows:

1. (Currently Amended) A composition, comprising:
a matrix functionality capable of providing an adhesive bond to an electrically conductive surface and an electrolyte functionality providing sufficient ionic conductivity to said composition so that, when said matrix functionality forms said adhesive bond to said electrically conductive surface, said composition can support a faradic reaction at said electrically conductive surface, said faradic reaction weakening said adhesive bond,
wherein, when said matrix functionality forms said adhesive bond to said electrically conductive surface, said adhesive bond has a shear strength greater than 200 psi.
2. (Original) The composition of claim 1, wherein said matrix functionality is provided by a polymer.
3. (Original) The composition of claim 2, wherein said polymer is selected from the group consisting of epoxies, phenolics, acrylics, melamines, maleimides, and polyurethanes and combinations thereof.
4. (Original) The composition of claim 2, wherein said polymer has a variable crosslink density to form regions of low crosslink density having a relatively high ionic conductivity and regions of high crosslink density having a relatively high mechanical strength.
5. (Original) The composition of claim 2, wherein said polymer includes coordination sites that are capable of solvating ions and that support the electrolyte functionality of said composition.
6. (Original) The composition of claim 5, wherein said coordination sites are selected from the group consisting of alkoxy moieties, disulfide moieties, thioalkyl moieties, nitrile moieties, and polyvinylidene fluoride moieties and derivatives thereof.

7. (Original) The composition of claim 1, wherein said electrolyte functionality is provided in said composition by an electrolyte additive selected from the group consisting of ion solvating molecules, oligomers and polymers, and ionomers.

8. (Original) The composition of claim 1 or 7, wherein said electrolyte functionality is localized in regions within said polymer to form a secondary phase with ionic conductivity.

9. (Original) The composition of claim 1, wherein said electrochemically disbondable composition is a phase separated material having first regions of substantially matrix functionality and second regions of substantially electrolyte functionality

10. (Original) The composition of claim 9, wherein said first regions comprise a polymer.

11. (Original) The composition of claim 10, wherein said polymer is selected from the group consisting of epoxies, phenolics, acrylics, melamines, maleimides, and polyurethanes and combinations thereof.

12. (Original) The composition claim 2 or 11, wherein said polymer comprises epoxy.

13. (Original) The composition of claim 9, wherein said second regions are selected from the group consisting of ion solvating molecules, oligomers, and polymers and copolymer blocks thereof, and ionomers.

14. (Original) The composition of claim 13, wherein said ion solvating molecule is selected from the group consisting of low molecular weight alkoxides, alcohols, alkyl carbonates, cyclic esters, nitriles, amides and ureas.

15. (Original) The composition of claim 9, wherein said phase separated material comprises a block or graft copolymer containing non-polar components and components of ionic conductivity.

16. (Original) The composition of claim 15, wherein said non-polar component of said block copolymer is selected to have a low affinity for said matrix functionality of said composition to facilitate phase separation.

17. (Original) The composition of claim 1, further comprising a reservoir for containing curing or crosslinking agent.

18. (Original) The composition of claim 17, wherein the reservoir is selected from the group consisting of zeolites, clays and polymer gels.

19. (Original) The composition of claim 1 or 9, wherein said electrolyte functionality includes a salt capable of being solvated into said composition.

20. (Original) The composition of claim 19, wherein said salt is selected from the group consisting of alkali metal, alkaline earth and ammonium salts.

21. (Original) The composition of claim 19, wherein said salts include an anion selected from the group consisting of hexafluorophosphate, tetrafluoroborate, hexafluoroantimonate and perchlorate.

22. The composition of claim 19, wherein said salt is an ammonium salt and the ammonium cation is immobilized in said composition.

23. (Previously Amended) The composition of claim 1 or 9, wherein said composition has an ionic conductivity in the range of 10^{-11} S/cm to 10^{-5} S/cm.

24. (Previously Amended) The composition of claim 1 or 9, wherein said composition has an ionic conductivity in the range of 10^{-9} S/cm to 10^{-7} S/cm.

25. (Original) The composition of claim 1 or 9, further comprising an additive selected from the group consisting of pigments, corrosion inhibitors, leveling agents, gloss promoters, rubber tougheners and fillers.

26. (Original) The composition of claim 1 or 9, wherein said composition is an adhesive.

27. (Original) The composition of claim 26, wherein said adhesive composition has a shear strength with a surface of at least 200 psi.

28. (Original) The composition of claim 1 or 9, wherein said composition is a coating.

29. (Original) The composition of claim 28, wherein said coating is resistant to delamination from a substrate to which it is applied.

30. (Previously Amended) A composition, comprising:
a curable polymeric material; and
an electrolyte located in said curable polymeric material,
wherein said curable polymeric material, when cured, can form adhesive bonds with an electrically surface, said adhesive bonds having a shear strength of greater than 200 psi, and said composition has sufficient ionic conductivity to support a faradic reaction at said electrically conductive surface, said faradic reaction weakening said adhesive bonds.

31. (Previously Amended) The composition of claim 30, wherein said curable polymeric material is selected from the group consisting of epoxy resins, phenolic resins, acrylic resins, melamine resins, maleimide resins and urethanes.

32. (Original) The composition of claim 30, wherein the composition phase separates upon curing, said phase separated material having first regions of mechanical strength and second regions of ionic conductivity.

33. (Cancelled).

34. (Currently Amended) A bonded structure, comprising:
a first material layer having an electrically conductive surface;
a second material layer having an electrically conductive surface; and
a composition disposed between the electrically conductive surface of the first material layer and the electrically conductive surface of the second material layer, the composition, comprising:

a matrix functionality; and
an electrolyte functionality,

wherein:

the matrix functionality forms an adhesive bond to the electrically conductive surface of the first material layer, and

the electrolyte functionality provides sufficient ionic conductivity to the composition so that the composition can support a faradic reaction at the electrically conductive surface of the first material layer, the faradic reaction weakening said adhesive bond; and

the adhesive bond has a shear strength of greater than 200 psi.

35. (Original) The bonded structure of claim 34, wherein at least one of said conductive surfaces is an article to be secured by said bond.

36. (Original) The bonded structure of claim 34, wherein at least one of said electrically conductive surfaces comprises a conductive element selected from the group consisting of sheets, foils, grids and meshes.

37. (Original) the bonded structure of claim 35, wherein at least one of said electrically conductive surfaces comprises a conductive element selected from the group consisting of sheets, foils, grids and meshes.

38. (Original) The bonded structure of claim 36, wherein said conductive element further is bonded to an article using an adhesive.

39. (Cancelled).

40. (Previously Amended) The bonded structure of claim 34, wherein at least one of said first and second material layers is an electrically conductive coating applied to a substrate.

41. (Previously Amended) The bonded structure of claim 36, wherein at least one of said first and second material layers is an electrically conductive coating applied to a substrate.

42-61. (Cancelled).

62. (Previously Added) The bonded structure of claim 34, further comprising an electrically conductive element between the first and second material layers.

63. (Previously Added) The bonded structure of claim 34, wherein the first material layer comprises an electrically conductive element selected from the group consisting of foils, sheets, meshes and grids.

64. (Previously Added) The bonded structure of claim 63, wherein the second material layer comprises an electrically conductive element selected from the group consisting of foils, sheets, meshes and grids.

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65. (Previously Added) The bonded structure of claim 34, wherein the second material layer comprises an electrically conductive element selected from the group consisting of foils, sheets, meshes and grids.